

E-mails That Contain "WTC 7"

From: [REDACTED]
To: "Bill Pitts" <wpitts@nist.gov>
Subject: RE: Visit on Tuesday, April 23
Date: Fri, 19 Apr 2002 17:25:08 -0400
X-Mailer: Internet Mail Service (5.5.2650.21)

Bill,

I'm most interested in finding out what NIST has done and plans to do, and then coordinating our efforts, so they are not duplicative.

For the FEMA Building Performance Study Report, [REDACTED] is the chapter lead for WTC 7. So, I'm interested in photos and videos of WTC 7, particularly any views of the South face, any fires on the lower levels of the North face, and any interior video footage.

I'm also interested in ideas for the whole image collection process - naming digital files, documentation of the images, organizing/categorizing the image collection, data collected when contacting photographers, etc.

Phew, I think there will be plenty to talk about next week and thereafter. I look forward to meeting you!

Regards,

[REDACTED]

.....
Date: Fri, 19 Apr 2002 18:47:29 -0400
To: [REDACTED]
From: Bill Pitts <wpitts@nist.gov>
Subject: RE: Visit on Tuesday, April 23

[REDACTED]

I think I can bring you up to speed on 1 and 3. One of our staff has been working on a data entry program I am planning to bring along.

The question about WTC 7 is more difficult. I am aware of its importance. At this point I estimate that I have been through something like 7000 photos and tens of hours of video, and even though I have been looking, I have seen very few photos of fires and none of damage. Almost everything is from the north which provides very few clues.

There were some photographers wandering around in the area that day, so there may still be hope. Hopefully, you have had better luck.

Yes, we do have a lot to discuss. I am looking forward to it.

See you Tuesday.

Bill

Date: Thu, 11 Apr 2002 17:15:54 -0400
To: [REDACTED]
From: Bill Pitts <wpitts@nist.gov>

Bud:

This is a picture I downloaded from hereisnewyork.org. I don't have an attribution. I am not 100 % sure that it is even WTC 7, but I think it is. Sorry that I can't be more definite.

Bill

William M. Pitts
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BFRL Homepage: <http://www.bfrl.nist.gov/>

Date: Wed, 03 Apr 2002 11:31:32 -0500
To: [REDACTED]
From: Bill Pitts <wpitts@nist.gov>
Subject: Attention: [REDACTED]
[REDACTED]

This is a follow up e-mail to our short conversation yesterday, April 2th. For your information I also sent you an e-mail on March 23rd that gave a brief description of what we are trying to do as part of an investigation of the World Trade Center disaster.

Since I am hoping that your organization will be willing to help our effort a great deal, I felt that I should provide a few more details about the investigation. A major part is designed to determine the technical reasons for the collapse of the Twin Towers and the WTC 7 building. Without going into too many technical details, it is essential for the project that we assemble as complete photographic time record of the appearances of the buildings and smoke plume as possible. The period from the time when the North Tower was struck until it collapses is obviously of great interest, but later photos (particularly of WTC 7), also have a great deal of interest. Pictures of the aftermath are also relevant since they contain information about the condition of building components during and following the collapses.

We plan to use to this photographic record to assess the initial damage to the buildings from the impacts, describe the growth and spread of fires, and learn as much about the collapses as possible.

As you are more aware than I, there were an incredible number of photographs and videos recorded on September 11th. It is easily the most photographed disaster ever. Even though the event was horrible, the extensive documentation offers an important opportunity to understand what happened and to make changes (e.g., to building codes) so that future buildings will be safer.

It is an immense task to collect and catalog the material. Certain types of photos are potentially more useful than others. High resolution digital photos and videos with time stamps are particularly desirable, but other photographs can also provide a lot of insights.

My approach thus far has been to collect entire sets from photographers who were shooting on September 11th. In this way we can obtain a great deal of info about the photos such as 1) are they at the highest resolution, 2) where they were shot, 3) are there timestamps present, etc. So far I have photos from over twenty photographers, including several who are published. The total number of photos exceeds 700 and is growing rapidly. However, from the material on you site it is clear that I have just scratched the surface. This is particularly true since I hadn't seen most of the photos on [hereisnewyork](http://www.hereisnewyork.com) before, and many are obviously very relevant to what we are trying to accomplish.

I am hoping that you will be able to help our investigation in a couple of ways. In an inadvertent way you have already made a major contribution. Simply by assembling a large number of photos you have provided a resource that we can use during our investigation, as long as it stays on the network. This is true even when the photos are at relatively low resolution. Is it possible that we could have access to your highest resolution images? It would also be a major help if you could provide names and contact information for some of the photographers so we can contact them directly about providing complete sets of their photos for our investigation. In many ways our job is a very difficult because of the horrible events that we are dealing with, but I have been encouraged by the willingness of most individuals go out their way to provide their photos and other information for research purposes.

I know that there must be a large number of privacy concerns in making material available to us. Hopefully, we can find some way to accommodate these legitimate concerns.

You suggested that I make a list of photos that are of interest to us. I tried to restrain myself, but the list turned out to be long. It follows:

0126	0127	0215 (mir)	0249	0294	0324	0325
0362	0363	0504	0507	0508	0579	0652
0653	0662	0682	0722	0776	0785	0790
0865	0879	0948	0993	1008	1015	1087
1088	1138	1141	1146	1147	1215	1229
1262	1305	1315	1317 (mir)	1325	1356	1371
1375	1407	1472	1526	1531	1539	1541
1586	1615	1644	1692	1698	1762	1769
1810	2087	2106	2121	2141	2182	2187
2322	2327	2328	2358	2359	2446	2468
2471	2472	2498	2499 (mir)	2528	2585	2606
2610	2629	2660	2663	2698	2699	2718
2730	2739	2746	2777	2788	2784	2809
2846	2853	2858	2876	2877	2878	2918
2936	2937	2986	2987	3027	3028	3030
3062	3073	3074	3084	3109	3120	3123
3145	3177	3179	3186	3188	3189	3190
3191	3194	3270	3289	3309	3314	3344
3381	3392	3419	3423	3429	3461	3501
5034	5075	5087	5088	5096	5120	5140
5204	5242	5243	5244	5255	5306	5335
5345	5359	5363	5407	5490	5538	5539

5540	5541	5542	5543	5544	5572	5600
5851	5895	5896	5899	5970	5972	5973
5988	5989	5990	5996	5998	6007	6021
6022	6065	6066	6079	6120	6128	6149
6233	6236	6256	6289	6292	6303	6308
6316	6327	6343	6386	6404	6414	6431
6472	6627	6680	6685	6786	6788	6815

I know that your organization must be nearly overwhelmed with what you are trying to accomplish, but I hope that you will consider working with us on our investigation. If you have any questions or desire further information please feel free to contact me.

Thanks in advance.

Bill Pitts

P.S. I believe the photos marked "mir" were scanned reversed.

William M. Pitts
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 National Institute of Standards and Technology
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 Fax: 301-975-4052
 e-mail: wpitts@nist.gov
 BFRL Homepage: <http://www.bfrl.nist.gov/>

.....

Date: Sat, 23 Mar 2002 13:54:56 -0500

To: [REDACTED]

From: Bill Pitts <wpitts@nist.gov>

Subject: Re: World Trade Center Photos

[REDACTED]

Thanks for writing back. Actually, the first four photos on your page are of great interest to our investigation. Please let me explain why. What I am trying to do is collect as many photos and videos as possible from every direction of the two towers (We are also very interested in WTC 7, but there is considerably less material). The goal is to reconstruct the appearance of the areas containing fires as a function of time. This should tell us something about the fire intensity and spread during the times between when the planes crashed and the collapse of the buildings. As you suggest, flames are important, but the appearance of smoke also indicates that windows have been opened in some way. An important aspect concerning building fires is the area of openings for air to enter.

Your pictures from the north and northwest look to be very detailed. Note that I am referring to the sides of the towers facing Vesey Street as the north faces, even though this isn't true north. Furthermore, there are indications of times in your captions, which are very important to us. I don't know what type of camera you were using that day, but if it was digital I am confident that your originals have considerably more resolution and detail than shown in the photos on your site. It is also possible that there might be a time stamp associated with the files. Obviously, both of these are of great interest to us.

It is also clear from the photos that you were moving around. As I said, we are interested in obtaining photos from as many directions as possible. A question that I will ask if you make your photos available to us is where they were taken. From your site I don't know how many photos of the burning buildings you took, but I would be interested in seeing them all if possible.

In effect, your photos would become part of a huge puzzle. The task I am trying to accomplish is huge. I don't know how many cameras were out there on September 11th, but I would be surprised if it wasn't in the thousands. So far I have received original sets of photos and videos from over twenty sources with views from near where you were, from Battery Park, from New Jersey, from Brooklyn, and from elsewhere.

I hope that you will consider making your photos available to us for our investigation as well.

Thanks for your consideration and time.

Regards,

Bill

Date: Wed, 06 Mar 2002 02:06:20 -0500
From: [REDACTED]
Subject: [Fwd: ASMP + FEMA WTC Image Analysis Project for Building Performance Study]
To: Bruce Swiren <bruce.swiren@FEMA.gov>
Cc: Paul Tertell <paul.tertell@FEMA.gov>, [REDACTED]
Reply-to: [REDACTED]
Message-id: [REDACTED]
Organization: [REDACTED]
MIME-version: 1.0
X-Mailer: Mozilla 4.75C-CCK-MCD {C-UDP; EBM-APPLE} (Macintosh; U; PPC)
Content-type: multipart/mixed; boundary="Boundary_(ID_Ft3NfYtPUIJn/iup3fwm1Q)"
X-Accept-Language: en
X-RCPT-TO: [REDACTED]
X-Mozilla-Status2: 00c00000

Dear Bruce,

I had intended to include you in the original cc list of the message I am forwarding to you now, but forgot. When you and I spoke at an earlier time about the issue of photographers' permissions, you mentioned [REDACTED], so I am taking the liberty of copying this message to him now, as well as related messages that follow.

Last week [REDACTED] made me aware of the lack of functional photographer's agreements to allow BPAT to use relevant photographic material as needed. Such agreements are required not just for the initial March report, but for what I presume will come thereafter too, since we've touched only a fraction of the image material that we know is available.

The letter I am forwarding is my appeal to ASMP, the American Society of Media Photographers, for help creating these agreements. In my letter, I also refer to the NYPPA, which is the NY Press Photographers Association. Through an old colleague, I arranged to have us speak about BPAT at their annual gathering held this past Saturday, and I went with [REDACTED] and presented the project.

Since that event, I have convinced the national editorial photographers group, a weightier supergroup of sorts to the NYPPA, to take on the issue of a digital rights agreement in the context of BPAT and its future forms. They agree that having a solution to this is a predicate to involving the population of professionals who we are trying to reach, and they will help us, but not in time to have meaning for the March report.

In both cases, ASMP and NYPPA, there is the additional benefit of their willingness to promote our project to their membership at large. That will be a big help, but I am going to ask them to delay doing so until we know what specifically is happening to the project after the first report comes out.

By the way, here's an update on my progress with NBC. As I had hoped, the letter you modified for me was the key to being able to make us official with the head of the station, and now I can take material away from the studio. I don't have to drag the engineers there to see things. Thank you for your help getting it to this point. It is paying off right away.

What NBC has found of greatest importance are shots of Building 7 going down. [REDACTED] will see these tomorrow. We are fortunate that anything we get a copy of from NBC will come off of digital masters, before the signal hits a transmitter at all. (Read as, we get the best picture quality possible.) I am having NBC maintain a digital master tape of the material they cut for us, to which future material will be added.

On a related note, I have arranged for us to visit a company where we will see 100% of what was broadcast on all TV stations coming out of NY on September 11th. Sounds impossible, but true. I am trying to have [REDACTED] bring several engineers so we can all go through many different station feeds at the same time. I expect the elusive tape of two freelancers inside of 7 before it collapsed will be found there.

Finally, a word about the possibility that a lot of our work product will lose its benefit to the project if neglected too long. I refer to the fact that there is a whole group of photo and broadcasting professionals whose attention I've now gotten on this, and we must be cautious that if too much time lapses, the interest in helping us wanes. Further, I have enlisted the help of a many colleagues in the field who have themselves generated interest in helping us. A good example is my friend [REDACTED], a broadcast veteran (he's spent as much time in the WTC transmission tower as anyone), who put out an APB about our project to 25 of his peers. All of this represents a tremendous amount of value in the bank, so to speak, but is lost if unspent in time.

Please take a look at the reply I received from ASMP's general counsel, [REDACTED], when you are able. I will forward that to you next.

Regards,
[REDACTED]

[REDACTED]
[REDACTED]

.....

E-mails Containing "7 WTC"

X-Sender: wgrossha@mailserver.nist.gov
X-Mailer: QUALCOMM Windows Eudora Version 5.0
Date: Thu, 27 Dec 2001 09:10:00 -0500
To: dave.evans@nist.gov, james.lawson@nist.gov, daniel.madrzykowski@nist.gov,
william.twilley@nist.gov, robert.vettori@nist.gov,
william.walton@nist.gov, rodney.bryant@nist.gov,
laurean.delauter@nist.gov, michelle.donnely@nist.gov,
marco.fernandez@nist.gov, jack.lee@nist.gov, samuel.manzello@nist.gov,
william.pitts@nist.gov, anthony.putorti@nist.gov,
gary.roadarmel@nist.gov, david.stroup@nist.gov, jiann.yang@nist.gov,
howard.baum@nist.gov, matthew.bundy@nist.gov, jason.floyd@nist.gov,
glenn.forney@nist.gov, walter.jones@nist.gov, jay.mcelroy@nist.gov,
kevin.mcgrattan@nist.gov, kuldeep.prasad@nist.gov,
ronald.rehm@nist.gov, john.widmann@nist.gov, jason.averill@nist.gov,
richard.bukowski@nist.gov, regina.burgess@nist.gov,
thomas.cleary@nist.gov, william.davis@nist.gov, richard.gann@nist.gov,
richard.peacock@nist.gov, paul.reneke@nist.gov,
michael.selepak@nist.gov, kathleen.whisner@nist.gov,
lori.brassell@nist.gov, kathryn.butler@nist.gov, rick.davis@nist.gov,
richard.harris@nist.gov, gregory.linteris@nist.gov,
roy.mclane@nist.gov, marc.nyden@nist.gov, thomas.ohlemiller@nist.gov,
john.shields@nist.gov, michael.smith@nist.gov,
george.mulholland@nist.gov, jeffrey.gilman@nist.gov,
nelson.bryner@nist.gov, kathy.notarianni@nist.gov,
anthony.hamins@nist.gov, ruth.perkins@nist.gov, paula.garrett@nist.gov,
betty.thames@nist.gov, margaret.walz@nist.gov, wanda.duffin@nist.gov
From: William Grosshandler <wgrosshandler@nist.gov>
Subject: Fwd: NYTimes.com Article: Experts Urging Broader Inquiry in
Towers' Fall

Interesting reading from the New York Times:

Bill

Experts Urging Broader Inquiry in Towers' Fall

December 25, 2001

By JAMES GLANZ and ERIC LIPTON

Saying that the current investigation into how and why the
twin towers fell on Sept. 11 is inadequate, some of the

nation's leading structural engineers and fire-safety experts are calling for a new, independent and better-financed inquiry that could produce the kinds of conclusions vital for skyscrapers and future buildings nationwide.

Senator Charles E. Schumer and Senator Hillary Rodham Clinton, both of New York, have joined the call for a wider look into the collapses. In an interview on Friday, Mr. Schumer said he supported a new investigation "not so much to find blame" for the collapse of the buildings under extraordinary circumstances, "but rather so that we can prepare better for the future."

"It could affect building practices," he said. "It could affect evacuation practices. We live in a new world and everything has to be recalibrated."

Experts critical of the current effort, including some of those people who are actually conducting it, cite the lack of meaningful financial support and poor coordination with the agencies cleaning up the disaster site. They point out that the current team of 20 or so investigators has no subpoena power and little staff support and has even been unable to obtain basic information like detailed blueprints of the buildings that collapsed.

While agreeing that any building hit by a jetliner would suffer potentially devastating damage, experts want to examine whether the twin towers may have had hidden vulnerabilities that contributed to their collapse.

The lightweight steel trusses that supported the tower's individual floors, the connections between the trusses and the buildings' vertical structural columns, as well as possible flaws in the fireproofing have been drawing scrutiny from fire safety consultants and engineers in recent weeks.

"Two buildings came down," said Joseph F. Russo, director of the Center for Fire Safety Engineering at Polytechnic University in Brooklyn, referring to the twin towers. "That suggests some degree of predictability."

"And if it was predictable," Mr. Russo said, "was it preventable?"

Family members of some victims have added their voices to the calls for a wider investigation.

The exact scope of an expanded inquiry has not been defined. But the central desire is to learn any lessons that might be hidden in the rubble and to pinpoint the exact sequence and cause of the collapse, regardless of whether it was inevitable from the moment the planes struck, members of the investigative team and others said.

In calling for a new investigation, some structural engineers have said that one serious mistake has already been made in the chaotic aftermath of the collapses: the decision to rapidly recycle the steel columns, beams and trusses that held up the buildings. That may have cost investigators some of their most direct physical evidence with which to try to piece together an answer.

Officials in the mayor's office declined to reply to written and oral requests for comment over a three-day period about who decided to recycle the steel and the concern that the decision might be handicapping the investigation.

"The city considered it reasonable to have recovered structural steel recycled," said Matthew G. Monahan, a spokesman for the city's Department of Design and Construction, which is in charge of debris removal at the site.

"Hindsight is always 20-20, but this was a calamity like no other," said Mr. Monahan, who was designated by the mayor's office to respond to questions about the investigation. "And I'm not trying to backpedal from the decision."

Interviews with a handful of members of the team, which includes some of the nation's most respected engineers, also uncovered complaints that they had at various times been shackled with bureaucratic restrictions that prevented them from interviewing witnesses, examining the disaster site and requesting crucial information like recorded distress calls to the police and fire departments.

The investigation, organized immediately after Sept. 11 by the American Society of Civil Engineers, the field's leading professional organization, has been financed and administered by the Federal Emergency Management Agency. A mismatch between the federal agency and senior engineers accustomed to bypassing protocol in favor of quick answers has been identified as a clear point of friction.

"This is almost the dream team of engineers in the country working on this, and our hands are tied," said one team member who asked not to be identified. Members have been threatened with dismissal for speaking to the press.

"FEMA is controlling everything," the team member said. "It sounds funny, but just give us the money and let us do it, and get the politics out of it."

A spokesman for FEMA, John Czwartacki, said the agency's primary mission was to help victims, emergency workers and to speed the city's recovery, and added, "We are not an investigative agency."

But given the assignment to examine the structural failures at the World Trade Center, the agency has so far spent roughly \$100,000 and Mr. Czwartacki said that more financing could be expected after the group produced what he called an "interim document" in the spring.

"I've heard the calls for the N.T.S.B.-style investigation," Mr. Czwartacki said, referring to appeals by engineers and some families of trade center victim for an exhaustive examination like those done by the National Transportation Safety Board when a plane crashes. "I don't think this study will do it for them."

Mr. Czwartacki added that it was premature to comment on whether team members were receiving necessary information because the study has not been completed. Regardless of what any investigation might find, it is unclear how many civilian lives would have been saved if the buildings had not collapsed, because so many died on the burning upper floors.

Despite the universe of unknowns, the calls for more extensive investigations of various kinds are coming from engineers, fire experts and professional organizations in New York and across the nation.

"What some of us are calling for is a probe or reassessment," said Loring A. Wyllie Jr., a member of the National Academy of Engineering and chairman emeritus and senior principal at Degenkolb Engineers in San Francisco. Mr. Wyllie, who has investigated many building collapses after earthquakes, said the work would involve "a critique of our building practices" in search of greater safety after Sept. 11.

He added that intensive studies of building failures in disasters like the Northridge earthquake near Los Angeles in 1994 had led to important structural advances.

Calling an intensive new investigation "absolutely necessary," Mr. Russo, of Polytechnic University in Brooklyn, said the expense could be justified by the payoff of better safety in high-rises of the future. Other experts take a still wider view, favoring a study that would look at the implications of the collapses - a nearby, 47-story building, 7 World Trade Center, also fell on Sept. 11 after burning for most of the day - for fire codes, building standards and engineering practices across the board.

National organizations charged with addressing building and fire safety issues have sent letters urging the federal government to invest as much as \$15 million a year to study the vulnerability of buildings to terrorist attacks and possible changes to fire and safety standards.

"There is an urgent and critical need to determine the

lessons to be learned from these events," reads a letter from the American Society of Civil Engineers, dated Nov. 15.

In other disasters, FEMA, the Army Corps of Engineers and other federal agencies have played a more central role in making decisions about cleanup and investigations. But from the start, they found that New York had a degree of engineering and construction expertise unlike any they had encountered.

"They wanted to do a lot of things on their own," said Charles Hess, who is in charge of civil emergency management for the Army Corps. "Which they're very capable of doing."

But during a recovery effort that received worldwide praise, the city made one decision that has been endlessly second-guessed. To deal with nearly 300,000 tons of crumpled steel, the city quickly decided to ship it to scrap recyclers.

Dr. Frederick W. Mowrer, an associate professor in the fire protection engineering department at the University of Maryland, said he believed the decision could ultimately compromise any investigation of the collapses. "I find the speed with which potentially important evidence has been removed and recycled to be appalling," Dr. Mowrer said.

But Mr. Monahan, the City Department of Design and Construction spokesman, pointed out that members of the investigation team were eventually allowed to visit the site and inspect steel at the scrapyards and continue doing so.

Some experts have suggested that the only way to definitively determine the sequence and cause of the collapse is to recover large amounts of steel from the areas near where the planes struck, and possibly reassemble sections of the towers.

Others say such a reconstruction of an entire section might be impractical, but also expressed discomfort with the impediments they said they have faced in their investigation.

For example, three months after the disaster, Ronald Hamburger, an expert in structural analysis at A.B.S. Consulting in Oakland, Calif., and a director of the National Council of Structural Engineers Associations, said he had not even been given access to basic blueprints describing where the steel and other structural elements had been when the World Trade Center was whole.

"I'd like to be able to have a set of the drawings for all of the affected buildings," Mr. Hamburger said. "I don't

have that."

<http://www.nytimes.com/2001/12/25/nyregion/25TOWE.html?ex=1010291894&ei=1&en=42c45819e9e9cfc5>

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X-Sender: wgrosssha@mailserver.nist.gov
X-Mailer: QUALCOMM Windows Eudora Version 5.0
Date: Sun, 03 Mar 2002 11:42:24 -0500
To: william.pitts@nist.gov, ronald.rehm@nist.gov
From: William Grosshandler <wgrosshandler@nist.gov>
Subject: Fwd: NYTimes.com Article: Burning Diesel Is Cited in Fall of
3rd Tower

Sender: articles-email@msl.lga2.nytimes.com
Reply-To: sunder@nist.gov
From: sunder@nist.gov
To: wgrosshandler@nist.gov
Subject: NYTimes.com Article: Burning Diesel Is Cited in Fall of 3rd Tower
Date: Sat, 2 Mar 2002 07:30:48 -0800 (PST)

This article from NYTimes.com
has been sent to you by sunder@nist.gov.

Burning Diesel Is Cited in Fall of 3rd Tower

March 2, 2002

By JAMES GLANZ and ERIC LIPTON

Structural beams that held up 7 World Trade Center were
compromised in a blaze fed by diesel fuel, causing the
building to collapse.

<http://www.nytimes.com/2002/03/02/nyregion/02TOWE.html?ex=1016083048&ei=1&en=c49b1b81e4098021>

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Date: Sun, 03 Mar 2002 10:30:35 -0800
From: [REDACTED]
X-Mailer: Mozilla 4.77 [en] (Win95; U)
X-Accept-Language: en
To: george.mulholland@nist.gov, william.pitts@nist.gov
Subject: [Fwd: NYTimes.com Article: Burning Diesel Is Cited in Fall of 3rd Tower]

FYI-This is an interesting article that may be of relevance to you.

Linda

Return-Path: [REDACTED]

Received: [REDACTED] ([64.15.247.171])
by eagle (EarthLink SMTP Server) with ESMTP id 16HlzU4pg3NZFji0
for [REDACTED], Sat, 2 Mar 2002 18:18:22 -0800 (PST)

Received: from [REDACTED] (email5 [10.0.0.170])
by [REDACTED] (Postfix) with ESMTP id 69DC9C3737
for [REDACTED], Sat, 2 Mar 2002 21:21:47 -0500 (EST)

Received: by [REDACTED] (Postfix, from userid 202)
id 3EB0158A51; Sat, 2 Mar 2002 21:16:34 -0500 (EST)

Sender: articles-[REDACTED]

Reply-To: gjfiech@sandia.gov

Errors-To: [REDACTED]

From: gjfiech@sandia.gov

To: [REDACTED]

Subject: NYTimes.com Article: Burning Diesel Is Cited in Fall of 3rd Tower

Message-Id: [REDACTED]

Date: Sat, 2 Mar 2002 21:16:34 -0500 (EST)

X-Mozilla-Status2: 00000000

This article from NYTimes.com
has been sent to you by gjfiech@sandia.gov.

Interesting fire safety analysis application.

gjfiech@sandia.gov

Burning Diesel Is Cited in Fall of 3rd Tower

March 2, 2002

By JAMES GLANZ and ERIC LIPTON

Massive structural beams that functioned as a sort of
bridge to hold up the 47-story skyscraper known as 7 World
Trade Center were compromised in a disastrous blaze fed by
diesel fuel, leading to the building's collapse on Sept.
11, investigators have concluded in a preliminary report.

The tower was set on fire by debris from the twin towers and burned for about seven hours before collapsing in the late afternoon under previously unexplained circumstances. The analysis of its collapse is one of the first detailed findings by a team of engineers organized by the Federal Emergency Management Agency and the American Society of Civil Engineers to understand the fate of all the buildings around the site.

As much as 42,000 gallons of diesel fuel was stored near ground level in the tower and ran in pipes up to smaller tanks and emergency generators for Mayor Rudolph W. Giuliani's command center, the Secret Service's office and other tenants.

Investigators have determined that the burning fuel apparently undermined what is known as a transfer truss. The trusses, a series of steel beams that allowed the skyscraper to be built atop multistory electricity transformers, were critical to the structural integrity of the building and ran near the smaller diesel tanks.

A failure of the same type of structural bridge contributed to the collapse of the Alfred P. Murrah Federal Building in Oklahoma City when it was bombed in 1995. Federal guidelines for public buildings, created in 1996, warned of the dangers of such trusses in terrorist attacks.

"It's certainly right in the vicinity where the columns go into this transfer system," said a person knowledgeable about the investigators' draft report on the World Trade Center. "The rest of the building is built on top of the bridge."

While 7 World Trade Center, which stood across Vesey Street just to the north of the twin towers, was not formally a federal building, it did house crucial government offices that included the city's nerve center for emergency response.

The investigators said that their conclusions, combined with other findings about the failure and collapse of 5 World Trade Center, could prompt serious changes in the codes used in building construction.

The findings are in a draft report that has already been circulated among government agencies, and are based on videos made on Sept. 11, witnesses' reports, interviews with firefighters, evidence from the debris pile and structural analysis. Team members, who described many of the findings, cautioned that the conclusions on the collapse of 7 World Trade Center could still be modified as reviews proceed.

But Irwin Cantor, one of the building's original structural

engineers, who is now a consulting engineer and member of the City Planning Commission, said the diesel-related failure of transfer trusses was a reasonable explanation for the collapse.

He said he believed that diesel tanks were not envisioned in the original design of the building. "It ended up with tenants who had diesels," Mr. Cantor said. "I know none of that was planned at the beginning."

According to floor plans submitted to the Port Authority of New York and New Jersey, which owns the land on which 7 World Trade sat, the building complied with city fire codes, said Frank Lombardi, the authority's chief engineer. Those codes permit no more than one fuel tank with a capacity of 275 gallons or less on above-ground floors, he said.

Jerome M. Hauer, who was the director of Mayor Giuliani's Office of Emergency Management at the time the command center was opened at 7 World Trade, said several teams of engineers reviewed plans to open the office there. But no one ever mentioned any hazard associated with placing fuel tanks above ground, near a transfer truss, he said.

"There were a host of people who looked at this," said Mr. Hauer, who is now a managing director of the crisis and consequence group at Kroll Worldwide, a security consulting company based in New York. "We relied on their judgment."

Fire officials did at one point question the storage of large amounts of fuel well above the ground level, saying that one large tank for the mayor's command center, if ever compromised, might fuel a fire that would threaten the building.

The Sept. 11 draft report also has photographs and a description of debris collected from a previously undisclosed, multistory collapse within 5 World Trade Center, a nine-story office building that also burned on Sept. 11 but largely remained standing. The team has found that one specific type of bolted connection, called a column tree connection, that joined floor-support beams, failed in the heat of the fires, causing the four-story collapse in the part of 5 World Trade at the corner of Vesey and Church Streets.

Although no one died as a result of the collapses in 5 and 7 World Trade Centers, since both stood long enough to be evacuated, the team's findings are likely to lead to recommended changes in the way public and government buildings are constructed, much the way similar studies did after the Northridge earthquake near Los Angeles in 1994 and the Oklahoma City bombing.

The team is still deliberating on how tightly it can pin

down the precise train of events that led to the collapse of the twin towers themselves. But until now, the collapse of 7 World Trade has stood as one of the outstanding mysteries of the Sept. 11 attack, since before then, no modern, steel-reinforced high-rise in the United States had ever collapsed in a fire.

High-rise buildings are designed to be able to survive a fire, even if the fire has to burn itself out. The strategy is to ensure that the steel support structures are strong enough or protected well enough from fire that they do not give way in the time it takes for everything inside an office building, like furniture, to burn.

In major high-rise fires elsewhere in the country, such as the 1 Meridian Plaza fire in Philadelphia in 1991 and the First Interstate Bank fire in Los Angeles in 1988, this approach has worked. The 1 Meridian fire burned for 19 hours, leaping from floor to floor and burning out as combustible materials were used up. But the fires at 7 World Trade Center raged mainly on lower floors and never burned out, and in the chaos of Sept. 11, the Fire Department eventually decided to stop fighting the blazes.

"What the hell would burn so fiercely for seven hours that the Fire Department would be afraid to fight it?" said one member of the investigating team.

According to the Port Authority floor plans, 275-gallon diesel tanks sat on the fifth, seventh and eighth floors and were fed through pipes from the larger tanks near ground level. The team member said that while the diesel fuel remains the most likely candidate for feeding the fires, it was still unknown whether there could have been other sources of fuel in the building, kept there by tenants like the Secret Service that have disclosed little of what their spaces contained.

The huge steel transfer trusses ran mostly through the fifth, sixth and seventh floors where the fires burned. The purpose of the trusses, which included zigzagging and horizontal members and were concentrated around the building's core, was to allow 7 World Trade to be built over two Consolidated Edison substations that already existed on that spot when the building went up in the late 1980's. Together the stations held 10 transformers, each about 35 feet high and 40 feet wide.

Using the trusses to avoid having vertical structural columns pierce the transformers, the building was constructed around them like a hen sitting on a giant egg.

"We had to do design tricks to accommodate the existing Con Ed facility," said Mr. Cantor, the structural engineer. "This building had an awful lot of transfers."

Transfer trusses are a well-tested technique and are used in countless high-rise buildings, as well as in bridges around the world. Engineers say that transfer trusses, for most buildings, present no extraordinary hazard. But if there is an explosion, earthquake or long-burning fire, they can present a problem.

In Oklahoma City, during the 1995 bombing of the Federal Building, a large transfer girder on the building's third floor gave way, helping to precipitate a progressive collapse that later analysis showed was responsible for most of the 168 deaths. After this attack, federal guidelines for buildings that would hold government agencies were changed, recommending that buildings be designed so that single-point failures did not cause a catastrophic collapse.

Videos of the 5:28 p.m. collapse of 7 World Trade lend vivid support to the truss-failure theory. Roughly 30 seconds before the building goes down, a rooftop mechanical room starts to disappear, falling into the building's core. Then a second larger rooftop room sinks. The building then quickly collapses.

Both rooms were above sections of the building held up by the trusses. Other video evidence shows fire concentrated in the floors containing the trusses and the fuel tanks.

Dr. John D. Osteraas, director of civil engineering practice, Exponent Failure Analysis Associates, in Menlo Park, Calif., reviewed videos of the collapse, discussed it with other engineers and came to a similar conclusion; the fuel, the trusses and the fire brought 7 World Trade down. "The pieces have come together," he said. "Without the fuel, I think the building would have done fine."

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